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A Study on the Impact of Fiscal Expenditure Efficiency on the Urban-Rural Income Gap in the Context of Common Prosperity

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Abstract

Under the goal of common prosperity, the moderating effect of fiscal expenditure efficiency on the urban-rural income gap holds significant theoretical and practical importance. Based on provincial panel data from China for 2011–2020, this study employs a two-way fixed-effects model and mediating analysis to empirically examine the mechanism through which fiscal expenditure efficiency influences the urban-rural income gap.The findings reveal the following: First, improved fiscal expenditure efficiency significantly narrows the urban-rural income gap; urbanization serves as a key mediating pathway through which fiscal expenditure efficiency influences the income gap; in terms of regional heterogeneity, the narrowing effect is greater in central and western regions than in the eastern region; regarding expenditure structure, the moderating effect is more pronounced in regions with weaker infrastructure; and in terms of economic development levels, the effect is more pronounced in less developed regions.

Keywords

Common Prosperity; Fiscal Expenditure Efficiency; Urban-Rural Income Gap

1. Introduction

As an essential requirement of socialism and a key feature of Chinese-style modernization, common prosperity represents both the original aspiration and mission of the Communist Party of China's century-long struggle and a core strategic goal of national governance in the new era. Its theoretical scope encompasses three dimensions: the economic dimension emphasizes consolidating the material foundation through high-quality development; the political dimension concerns the Party's governing foundation and governance effectiveness; and the social dimension focuses on fairness, justice, and the optimization of resource allocation.On the new journey toward comprehensively building a modern socialist

country, the Central Committee has clearly stated that common prosperity must be advanced by optimizing the public policy system and improving the distribution system, marking a shift in policy focus from quantitative growth to qualitative balance. This strategic transformation requires a profound understanding of the complex nature of the urban-rural income gap—which is not only a prominent manifestation of unbalanced development but is also structurally intertwined with institutional barriers, the distribution of social capital, and the accessibility of public services.The historically entrenched dual institutional structure has led to stagnation in the flow of urban-rural production factors, imbalances in the allocation of public services, and the fragmentation of social security systems, constituting the deep-rooted causes of the widening gap. To resolve this dilemma, it is imperative to start with fiscal policy—a fundamental tool of state governance—and activate the distributive justice function of public resources by enhancing expenditure efficiency.

The essence of fiscal expenditure efficiency lies in achieving a Pareto improvement in the allocation of public resources through multidimensional optimization of scale, structure, and institutions. Theoretically, efficient fiscal expenditure can bridge the urban-rural development gap through three re-equilibration mechanisms: first, optimizing the supply of public services such as education and healthcare to enhance human capital accumulation among rural residents; second, removing barriers to factor mobility to promote two-way urban-rural integration; and third, strengthening the social security safety net to reduce institutional transaction costs.This efficiency-driven regulatory model not only aligns with the practical logic of “gradual advancement” toward common prosperity but also overcomes the sustainability constraints of traditional expansionist approaches. However, China is currently at a critical stage of dynamic equilibrium in pursuing the goal of common prosperity, and fiscal expenditure efficiency faces dual bottlenecks: at the institutional design level, the fixed-base budgeting model has led to rigid spending patterns, weakening the ability to allocate fiscal resources toward addressing rural livelihood shortcomings;at the level of incentive mechanisms, local governments, under growth-oriented performance evaluations, tend to allocate limited resources to visible sectors such as urban infrastructure rather than enhancing rural areas’ long-term development capacity. This lack of efficiency not only creates structural distortions in resource allocation but also prevents the transfer payment system from effectively penetrating the urban-rural divide, trapping the fiscal redistribution function in a dilemma of “diminishing marginal returns.”

Exploring the mechanism through which fiscal expenditure efficiency influences the urban-rural income gap essentially involves deconstructing the institutional synergy between economic efficiency and social justice within the “Five-in-One” framework of common prosperity. Its theoretical significance lies in transcending the traditional dichotomy between “efficiency and equity”: by reducing policy implementation leakage, accurately identifying needs and preferences, and

optimizing intertemporal resource allocation, improved fiscal efficiency can achieve the concurrent advancement of both equity and efficiency.This calls for a profound shift in research perspective—not only analyzing the economic effects of policy instruments but also embedding them within the broader context of modernizing national governance, while comprehensively considering the multidimensional interactions among social equity, ecological livability, and governance effectiveness.At the practical level, this research provides theoretical support for constructing an adaptive fiscal policy system: by establishing an evaluation mechanism for the transformation of distributive justice through expenditure efficiency, designing categorized reform pathways based on regional development stages, and innovating regulatory models empowered by digital technology, it ultimately formulates a Chinese solution for efficiency-driven policies aimed at shared prosperity. Such institutional innovation not only demonstrates the superiority of the dialectical unity of efficiency and equity under the socialist market economy but also contributes a dual paradigm of theory and practice to the global governance of income inequality.

2. Literature Review

2.1. Review of Domestic Literature

Domestic scholars generally define fiscal expenditure efficiency as the government's capacity to achieve economic regulation and social governance through optimized resource allocation, specifically encompassing three dimensions: scale efficiency, structural efficiency, and institutional efficiency. Scale efficiency emphasizes the balance between public and private sector resource inputs; structural efficiency focuses on the rational allocation of fiscal funds across urban and rural areas and industries; while institutional efficiency points to the regulatory mechanisms and policy implementation effectiveness throughout the entire fiscal expenditure process.For example, Zhou Guanglan (2023)[1] found through an empirical study of 83 counties and districts in Zhejiang Province that insufficient scale efficiency in fiscal expenditure in ethnic minority regions is a core contradiction constraining the process of common prosperity. A multidimensional evaluation system must be constructed using DEA models and GPCA analysis to enhance the precision of fund allocation. Regarding influencing factors, urban-biased fiscal policies and the fiscal decentralization system emerged as key variables.Chen Anping and Du Jinpei (2010)[2] point out that, under the guidance of GDP-oriented performance evaluations, local governments tend to allocate funds to urban construction, resulting in insufficient spending on agriculture, science, education, culture, and public health, and exacerbating the urban-rural income gap.Wang Xiaodan et al. (2022)[3] further found that social security expenditures in the western regions actually widen the urban-rural gap due to unequal distribution, whereas

expenditures on science, education, culture, and health exert a positive moderating effect through human capital accumulation.

In terms of econometric methods, domestic research shows a trend toward evolving from static models to dynamic spatial models. Early studies predominantly employed dynamic panel data models and systematic GMM methods; for example, Chen Anping (2010)[2] used such models to verify the nonlinear impact of expenditure structure on urban-rural disparities under fiscal decentralization.With technological advancements, three-stage DEA models have been widely adopted to eliminate environmental disturbances. For instance, Zhou Guanglan (2023)[1] used modified BCC and SFA models to decompose random factors, revealing the heterogeneity of fiscal expenditure efficiency in ethnic regions. Additionally, threshold effect models[4] and PVAR models[3][5] have gradually gained prominence; the former identifies nonlinear adjustment thresholds in social security spending, while the latter captures the impulse response dynamics between fiscal expenditure and urban-rural disparities.

At the policy analysis level, scholars generally emphasize reforming the "rural bias" in the structure of fiscal spending. Tang Kun (2023)[6] argues that agricultural support spending must be integrated with distinctive industries—such as improving agricultural subsidies and infrastructure investment—while balancing the urban-rural distribution of social security to exert a long-term regulatory effect.Empirical studies by Sun Jingran (2024)[7] and others indicate that fiscal expenditure can indirectly narrow the urban-rural gap by guiding charitable organizations, but this requires improving the efficiency of fund utilization through tax incentives and targeted funding. Addressing regional heterogeneity, Wang Xiaodan (2022)[3] suggests that the western regions should prioritize increasing spending on science, education, culture, and health; the central regions should expand the proportion of spending on economic development; and the eastern regions should optimize the performance management of existing funds. Additionally, research on ethnic minority regions[8] points out that fiscal funds should focus on industries with comparative advantages, such as the ecological and economic development of plateau pastoral areas, to address the dilemma of "insufficient prosperity."

Regarding institutional design, establishing a full-process performance evaluation system has become a consensus.Zhou Xinyi et al. (2021)[9] further recommend incorporating the digital economy into the evaluation framework, using digital technologies to monitor fund flows and avoid the "urban siphoning effect." Furthermore, the delineation of fiscal responsibilities between the central and local governments and reforms to the transfer payment system[11] are viewed as key institutional safeguards; legislation is needed to establish a minimum threshold for agricultural expenditure and create a horizontal compensation mechanism.

2.2. Review of Foreign Literature

International research has focused on the redistributive effects of fiscal spending and the constraints that govern them. The “inverted U-shaped hypothesis” proposed by Barro (1990)[12] suggests that agricultural spending initially narrows the urban-rural gap by improving production conditions, but once it exceeds the optimal level, diminishing marginal returns cause the gap to widen instead. This theory has been widely validated in developing countries. Afonso (2006) et al.[13] studies on new EU member states indicate that fiscal expenditure efficiency is positively correlated with income levels and public service capacity, while emerging Asian markets exhibit significantly higher expenditure efficiency than Eastern European countries due to stronger property rights protection. Yan (2023) et al. found through a cross-country extension analysis based on Chinese data that the development of the digital economy exhibits a U-shaped pattern where the urban-rural gap is first narrowed and then widened, with the inflection point depending on whether fiscal expenditure can synergize with digital infrastructure.

The impact of expenditure structure exhibits significant regional variations. Subarna and Cerf (2009)[15] found that while increasing the total scale of fiscal spending can narrow the urban-rural gap in developing countries, structural adjustments are more critical in developed countries due to saturated urbanization.Antarabangsa, D. P. (2022)[16] analyzed panel data from 51 countries and found that healthcare spending has a significant redistributive effect in Asian nations, whereas African nations must prioritize increasing agricultural spending to break the cycle of poverty. Additionally, the “welfare trap” associated with social security spending has drawn attention; for instance, Germany uses actuarial models to dynamically adjust pension allocations, thereby preventing the fiscal burden from shifting toward urban areas.

Policy practices in developed countries emphasize the design of transfer payment systems and the rule of law. The "China Household Income Gap Report" by Southwestern University of Finance and Economics shows that Germany transfers 20% of taxes from developed regions to poorer states through the "Fiscal Equalization Fund" and enshrines the goal of equalizing public services in its constitution, thereby reducing the urban-rural income Gini coefficient to below 0.3.In the United States, non-cash transfers such as “food stamps” and Medicaid have increased the income of the bottom 20% of households by nearly fourfold. These experiences demonstrate that legislative safeguards and refined subsidy design are central to enhancing expenditure efficiency.

In terms of econometric methods, spatial econometric models and dynamic GMM have become mainstream. Li et al. (2024)[17] constructed a spatial panel model and found that the spatial spillover effects of fiscal spending can reduce urban-rural disparities in neighboring regions by 12%–15%. Antarabangsa, D. P. (2022)[16] used systematic GMM to verify the inverted U-shaped relationship between

government spending and income inequality, identifying that the efficiency elasticity in developing countries is 0.18 higher than in developed countries.

3. Theoretical Analysis and Research Hypotheses

Under the goal of common prosperity, optimizing the efficiency of fiscal spending can effectively alleviate income distribution imbalances between urban and rural residents by improving the precision of resource allocation and the targeting of policies. Highly efficient fiscal spending can reduce resource misallocation and institutional leakage, enabling social welfare and productive expenditures to more accurately reach vulnerable rural groups, thereby directly narrowing the urban-rural income gap[17][18] .The core mechanism lies in the fact that improved efficiency strengthens the redistributive function of fiscal funds. By reducing unnecessary administrative costs and optimizing the structure of transfer payments, it enhances support for rural residents'human capital accumulation and income-generating capacity, thereby offsetting the distributional inequities inherent in market mechanisms[20] . Consequently, we propose:

Research Hypothesis H1: Improved fiscal expenditure efficiency directly narrows the urban-rural income gap.

The moderating effect of fiscal expenditure efficiency on the urban-rural income gap partly relies on the mediating role of the urbanization process. High-efficiency fiscal expenditure can accelerate the orderly flow of factors such as population and capital toward urban areas and weaken the urban-rural dual structure through the equalization of public services[21][22] .In this process, the allocation of fiscal resources is tilted toward "new-type urbanization," promoting non-agricultural employment and wage income growth for rural labor, while simultaneously curbing the urban wage premium, ultimately achieving urban-rural income convergence[23][24] .It is worth noting that this pathway is constrained by the lag effect of fiscal expenditure, meaning that in the short term, the gap may widen due to the initial stage of factor concentration, but in the long term, the gap will narrow through the process of urbanization[25]. Based on this, this paper proposes:

Research Hypothesis H2: Fiscal expenditure efficiency indirectly narrows the urban-rural income gap through the urbanization process.

The moderating effect of fiscal expenditure efficiency on the urban-rural income gap exhibits significant heterogeneity, stemming from differences in regional development foundations, expenditure structure types, and the uneven characteristics of target groups. From a regional perspective, in areas with lower levels of economic development or poorer fiscal transparency, the marginal effects of efficiency improvements are stronger, as they can effectively address institutional weaknesses; whereas in the eastern regions, where market mechanisms are mature, the returns on efficiency improvements diminish[21].In terms of expenditure structure, efficiency gains in livelihood-related expenditures have a significant

impact on rural poverty alleviation, but balanced urban-rural distribution must be ensured; efficiency in productive expenditures may widen disparities in late-industrialization regions due to capital bias, whereas in underdeveloped regions, it can narrow disparities through industrial linkage[26][27]. Furthermore, efficiency improvements have a more pronounced effect on income growth for rural residents, women, and groups with low social capital[29], as these groups rely more heavily on fiscal transfers and public service safety nets[28]. This heterogeneity stems from systemic differences in local government quality, fiscal self-sufficiency, and policy implementation environments[30]. Consequently, we propose:

Research Hypothesis H2: The urban-rural income gap effect on fiscal expenditure efficiency exhibits multidimensional heterogeneity.

4. Empirical Analysis

4.1. Specification of the Econometric Model

To examine the impact of fiscal expenditure efficiency on the urban-rural income gap, this paper constructs the following econometric models:

$$\text{gap}_{it} = \alpha + \beta eff_{it} + \gamma x_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

Where the dependent variable gapitrepresents the urban-rural income gap in regioni in yeart, measured as the ratio of urban per capital disposable income to rural per capital net income; effit denotes the fiscal expenditure efficiency of regioni in yeart; and x is a set of control variables, primarily comprising socio-economic characteristics at the provincial level.Additionally, ui is the provincial fixed effect, λt is the time fixed effect, and εi,t is the random error term. β is the regression coefficient of interest in this study; if it is significantly negative, it confirms the research hypothesis: an improvement in fiscal expenditure efficiency will narrow the urban-rural income gap.

4.2. Variable Selection and Explanation

4.2.1. Dependent variable

This paper draws on the research methods of Liu Xiaoguang[31] and, using the ratio of urban residents' per capital disposable income to rural residents' per capital net income to measure the urban-rural income gap.In the robustness analysis section, following the approach of Bao Tong[32] and , this paper will use the Theil index to measure the urban-rural income gap. The Theil index comprehensively considers the income and population structures of urban and rural residents, enabling a more scientific measurement of disparities between regions or between urban and rural areas.

4.2.2. Explanatory Variables

The explanatory variable in this paper is the fiscal expenditure efficiency index. Currently, scholars primarily use Data Envelopment Analysis (DEA) to measure

efficiency indices; however, this method does not account for slack in inputs and outputs. To address the shortcomings of traditional DEA models, this paper adopts the SBM model proposed by Tone[33] to calculate fiscal expenditure efficiency.The fiscal input indicator is per capital local general budget expenditure. The comprehensive output indicator system comprises seven sub-indicators: healthcare, education, environmental protection, social security, infrastructure, cultural affairs, and living standards and communications. Specific indicators are shown in Table 1 below.

Table1. Fiscal Expenditure Efficiency Indicator System

	Primary Indicators	Second-Level Indicators	Unit
Input Indicator	Per Capital Local General Budget Expenditure	Number of hospital beds per capital	10,000 yuan
Output Indicators	Healthcare		units
		Percentage of total population employed in regular higher education institutions	units
	Level of Education	Percentage of the total population accounted for by faculty and staff in primary and secondary schools	%
		Per capital park green space	%
	Environmental Protection	Daily wastewater treatment capacity	square meters per person
		Number of urban employed workers enrolled in basic old-age insurance	
	Social Security	Number of employees enrolled in basic medical insurance	10,000
		Railway operating mileage per capital	10,000
	Infrastructure	Road Area per Capital	km/person
		Number of performing arts venues	square meters per person
	Cultural Sector	Public library holdings per capital	units
		Total volume of postal and telecommunications services per capital	volumes per capital
	Communications	Per capital electricity consumption	10,000 yuan
			10,000 kWh

4.2.3. Control Variables

To minimize the risk of omitting variables and to ensure model robustness, the following control variables are introduced based on existing research[34]: foreign direct investment, measured by the ratio of foreign direct investment to regional GDP; industrial concentration, measured by the ratio of the number of employed persons (in ten thousand) to the administrative area (in square kilometers); industrial structure, measured by the ratio of the tertiary sector to the secondary sector;degree of government intervention, measured by the ratio of fiscal expenditure to regional GDP; level of industrialization, measured by the ratio of industrial value added to regional GDP; per capital GDP, measured by the ratio of year-end population to regional GDP; and level of social consumption, measured by the ratio of total retail sales of consumer goods to regional GDP.

Table 2. Descriptive Statistics of Variables

VARIABLES	Obs	Mean	Std. Dev.	Min	Max
Urban-Rural Income Gap	341	2.583	0.382	1.842	3.672
Fiscal Expenditure Efficiency	341	0.234	0.152	0.003	1.009
Foreign Direct Investment	341	0.018	0.015	0	0.08

Industrial concentration	341	0.025	0.038	0	0.217
Industrial Structure	341	1.251	0.694	0.518	5.297
Level of government intervention	341	0.278	0.192	0.107	1.334
Level of industrialization	341	0.313	0.091	0.072	0.556
GDP per capital	341	57,869.74	28,757.39	16,413	183,980
Level of social development	341	0.382	0.068	0.222	0.538

4.3. Data Notes

This paper conducts an empirical study using panel data from 31 provincial-level administrative regions (autonomous regions and municipalities) covering the period from 2011 to 2021. The values for each indicator are sourced from provincial statistical yearbooks, local government work reports, the *China Statistical Yearbook*, and the National Bureau of Statistics. To ensure the continuity and completeness of the sample, missing values were imputed using interpolation methods.

4.4. Analysis of Baseline Regression Results

Table 3 reports the regression results for the relationship between fiscal expenditure efficiency and the urban-rural income gap. Columns (1) and (2) both control for province and time fixed effects, while Column (2) includes additional control variables. As shown in the results of Table 2, after controlling for variables such as foreign direct investment, industrial concentration, level of industrialization, per capital GDP, and level of social development, the regression coefficient for fiscal expenditure efficiency on the urban-rural income gap is significantly negative at the 1% level.Regarding the control variables, their effects on the urban-rural income gap vary. Specifically, industrial concentration and social development level are negatively correlated with the urban-rural income gap; the degree of government intervention in industrial structure and per capital GDP are positively correlated with the urban-rural income gap; while the effects of foreign direct investment and the level of industrialization did not pass the significance test. Therefore, overall, fiscal expenditure efficiency is significantly negatively correlated with the urban-rural income gap, meaning that improving fiscal expenditure efficiency can narrow the urban-rural income gap, thereby validating Hypothesis 1.

Table 3. Results of the Baseline Regression

	(1)	(2)
VARIABLES	Urban-Rural Income Gap	Urban-Rural Income Gap
Fiscal Expenditure Efficiency	-0.206***	-0.157***
	(0.0466)	(0.0446)
Foreign Direct Investment		-0.492
		(0.355)
Industrial concentration		-1.740**
		(0.861)
Industrial structure		0.0696***

		(0.017)
Level of Government Intervention		0.413***
		(0.110)
Level of industrialization		-0.0428
		(0.103)
GDP per capital		2.26e-06***
		(4.07e-07)
Level of social development		-0.207***
		(0.0790)
Provincial fixed effects	YES	YES
Year fixed effect	YES	YES
Constant	2.776***	2.422***
	(0.0195)	(0.106)
Observations	341	341
R-squared	0.983	0.987

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively; values in parentheses are standard errors, as in the following.

4.5. Robustness Tests

4.5.1. Variable Substitution

To ensure a more comprehensive selection of indicators and more reliable results, we conduct a robustness test by replacing the dependent variable with a different indicator in the baseline regression. Specifically, we replace the dependent variable with the "Theil Index" while keeping all other variables constant and perform the regression. As shown in the regression results in Table 4, after replacing the dependent variable, the regression coefficient remains significantly negative at the 1% level, indicating that fiscal expenditure efficiency can narrow the urban-rural income gap, and Hypothesis 1 still holds.

4.5.2. Controlling for Other Policy Interferences

Since the baseline results of this paper may also be influenced by specific sample characteristics, such as the Fifth Plenary Session of the 19th CPC Central Committee setting out a vision for common prosperity with a long-term perspective and proposing the goal of "making more substantial progress toward common prosperity for all the people." Supporting policies include selecting Zhejiang Province as a pilot zone for common prosperity to test and implement measures first. Zhejiang was chosen because it already possesses a solid foundation in terms of income distribution.To eliminate the impact of this policy arrangement, this paper follows the approach of scholars Gao Yue[35] and by excluding Zhejiang Province's sample data from the regression in Column (2) of Table 4, while still controlling for province-year two-way fixed effects. The regression results show that the coefficient of the core explanatory variable is significantly negative at the 1% level, indicating robust findings.

4.5.3. Trimming

To mitigate the adverse effects of outliers on the research results, this study applied a 1% trimming procedure to the explanatory variables. The regression results in Column (3) of Table 4 show that, after excluding extreme samples, the effect of fiscal expenditure efficiency on the urban-rural income gap did not change significantly; therefore, the regression results are robust.

Table 4. Robustness Tests

	(1)	(2)	(3)
VARIABLES	Replace the dependent variable	Control for policy effects	Truncation
Fiscal Expenditure Efficiency	-0.0144***	-0.147***	-0.313***
	(0.00428)	(0.0451)	(0.0676)
Foreign Direct Investment	-0.157***	-0.479	-0.641*
	(0.0341)	(0.358)	(0.353)
Industrial concentration	0.0557	-1.853**	-1.573*
	(0.0826)	(0.869)	(0.850)
Industrial Structure	0.00873***	0.0734***	0.0749***
	(0.00163)	(0.0172)	(0.0168)
Level of government intervention	0.0778***	-0.0393	0.00547
	(0.0106)	(0.104)	(0.103)
Level of industrialization	0.0244**	0.392***	0.356***
	(0.00989)	(0.111)	(0.110)
GDP per capital	3.83e-07***	2.19e-06***	2.12e-06***
	(3.91e-08)	(4.13e-07)	(4.04e-07)
Level of social development	-0.0278***	-0.203**	-0.188**
	(0.00758)	(0.0795)	(0.0781)
Province fixed effects	YES	YES	YES
Year fixed effects	YES	YES	YES
Constant	-0.0264**	2.425***	2.424***
	(0.0102)	(0.107)	(0.105)
Observations	341	330	341
R-squared	0.989	0.986	0.987

4.5.4. Endogeneity Treatment

This paper controls for fixed effects at the year and region levels as much as possible in the baseline regression model to mitigate the impact of unobservable factors at the regional and annual levels on the estimation results. However, endogeneity issues may still exist in the regression results. On the one hand, omitted variables in the model specification may affect the robustness of the results; on the other hand, there may be a reverse causal relationship between the urban-rural income gap and fiscal expenditure efficiency.To mitigate the interference of endogeneity, this study employs the instrumental variables method: under the conditions of correlation and exogeneity, fiscal expenditure efficiency one period behind is selected as the instrumental variable for fiscal expenditure efficiency, and two-stage least squares is used to control for potential endogeneity issues.Column (1) of Table 5 reports the estimation results for the first stage. The estimated coefficient of the instrumental variable is significantly positive, and the F-statistic indicates the correlation of the

instrumental variable. The regression results for the second stage show that the coefficient of the dependent variable remains significantly negative. These results demonstrate that the regression results of this study remain robust after accounting for endogeneity issues in the model.

Table 5. Endogeneity Tests

	(1)	(2)
VARIABLES	Stage 1 Fiscal Expenditure Efficiency	Stage 2 Urban-Rural Income Gap
L. Fiscal Expenditure Efficiency	0.518***	
	(0.047)	
Fiscal Expenditure Efficiency		-0.257***
		(0.083)
Control variables	YES	YES
Province fixed effects	YES	YES
Year fixed effects	YES	YES
F		123.19
Observations	310	310
R-squared		0.858

5. Heterogeneity Analysis

The impact of fiscal expenditure efficiency varies across regions under different socioeconomic conditions. Therefore, the following sections of this paper will conduct a regional heterogeneity analysis of the sample based on the province's geographical region, level of economic development, and level of infrastructure.

Column (1) of Table 6 divides the sample into regions with high and low levels of economic development based on the median per capital GDP. For regions with low levels of economic development, fiscal expenditure efficiency has a significant negative impact on the urban-rural income gap at the 1% level.This indicates that in regions with lower per capital GDP, improving fiscal expenditure efficiency can significantly narrow the urban-rural income gap, and the optimal allocation of fiscal resources plays a more prominent role in promoting balanced urban-rural development in low-income regions. In contrast, in regions with high levels of economic development, the coefficient for fiscal expenditure efficiency did not pass the significance test. This suggests that in regions with higher levels of economic development, the direct impact of fiscal expenditure efficiency on the urban-rural income gap is not significant; this may be because the urban-rural gap in such regions is already influenced by a combination of multidimensional factors, thereby weakening the marginal effect of fiscal efficiency.

Column (2) of Table 6 divides the sample into eastern and central-western regions based on geographical location. It can be observed that improving fiscal expenditure efficiency plays a significant role in narrowing the urban-rural income gap in the central-western regions. This is related to the relative scarcity of fiscal resources and the higher degree of urban-rural development imbalance in these areas;

efficient fiscal expenditure is more likely to benefit rural areas through channels such as the equalization of public services and industrial support, thereby alleviating the urban-rural gap.In contrast, the eastern regions feature a high degree of economic marketization and better urban-rural integration. The marginal impact of fiscal expenditure efficiency is diluted by other factors, so its direct effect on the urban-rural income gap is not pronounced.

Infrastructure development is a key factor influencing income levels; therefore, this study divides the sample into two regions: those with well-developed infrastructure and those with underdeveloped infrastructure. Column (3) of Table 6 reports that improved fiscal expenditure efficiency in regions with underdeveloped infrastructure can directly improve rural development conditions by prioritizing the addressing of shortcomings in public services such as transportation, education, and healthcare, thereby significantly narrowing the urban-rural income gap.In contrast, regions with well-developed infrastructure exhibit smaller gaps in urban-rural public services. Improvements in fiscal expenditure efficiency in these areas tend to focus on optimizing the allocation of existing resources, resulting in a limited marginal impact on narrowing the urban-rural income gap.

Table 6. Heterogeneity Results

	Urban-Rural Income Gap (Grouped by Per Capital GDP)		Urban-Rural Income Gap (Eastern, Central, and Western Regions)		Urban-Rural Income Gap (Grouped by Infrastructure Level)	
VARIABLES	Below the Median	Above Median	Central and Western Regions	Eastern Region	Below the median	Above the median
eff	-0.740***	-0.0229	-0.444***	-0.0444	-0.679***	-0.0426
	(0.158)	(0.0383)	(0.149)	(0.0390)	(0.154)	(0.0432)
Control variables	YES	YES	YES	YES	YES	YES
Provincial fixed effects	YES	YES	YES	YES	YES	YES
Fixed effects for year	YES	YES	YES	YES	YES	YES
Constant	2.491***	2.355***	2.202***	0.504**	2.062***	1.693***
	(0.196)	(0.0963)	(0.174)	(0.240)	(0.111)	(0.170)
Observations	170	171	220	121	171	170
R-squared	0.902	0.879	0.903	0.887	0.870	0.934

6. Further Analysis

Urbanization is a key indicator through which fiscal expenditure plays a crucial role in resource allocation and the provision of public services, and it is an important pathway to achieving integrated urban-rural development. This paper measures the urbanization rate using the ratio of the urban population at year-end to the total population at year-end. Table 7 presents the regression results with urbanization as the mediating variable. According to the charts, the coefficient for fiscal expenditure efficiency on urbanization is significant at the 1% level and is positive, implying that improved fiscal expenditure efficiency can effectively drive the urbanization

process;The coefficient for urbanization on the urban-rural income gap is -0.0118 and is significant, indicating that advancing urbanization helps narrow the urban-rural income gap. The primary reason may be that efficient fiscal expenditure increases investment in rural infrastructure, education, and healthcare, thereby improving rural development conditions, attracting rural populations to migrate to urban areas, and accelerating urbanization.During the urbanization process, the rural population decreases and per capital resource availability increases. Furthermore, the development of urban industries creates more employment opportunities, and the transfer of rural labor to urban areas increases income. At the same time, the coverage of urban public services expands, promoting the equalization of basic public services between urban and rural areas, thereby narrowing the urban-rural income gap. Therefore, Research Hypothesis 2 is validated.

Table 7. Results of Mediational Analysis

	(1)	(2)
VARIABLES	Urbanization	Urban-Rural Income Gap
Fiscal Expenditure Efficiency	3.297***	-0.118***
	(0.835)	(0.0447)
Urbanization		-0.0118***
		(0.00305)
Constant	83.95***	3.143***
	(1.439)	(0.267)
Observations	341	341
R-squared	0.964	0.877

7. Conclusions and Recommendations

Based on an empirical analysis of provincial panel data from 2011 to 2021, this paper systematically examines the impact of fiscal expenditure efficiency on the urban-rural income gap and its heterogeneous characteristics in the context of common prosperity.The study finds that improved fiscal expenditure efficiency generally helps narrow the urban-rural income gap, with urbanization playing a key role; however, its effects exhibit significant regional heterogeneity. In regions with lower levels of economic development and weak infrastructure, the negative impact of fiscal expenditure efficiency on the urban-rural income gap is significant at the 1% level, indicating that optimizing the allocation of fiscal resources can significantly improve rural development conditions through channels such as equalizing public services and industrial support, thereby narrowing the urban-rural gap.However, in regions with higher levels of economic development or well-developed infrastructure, the direct impact of fiscal expenditure efficiency is not significant. This may be because higher levels of urban-rural integration, deepening marketization, and the diluting effects of multiple factors have weakened the

marginal contribution of fiscal policy. Based on this, this paper proposes the following three recommendations:

7.1. Optimize the structure of fiscal expenditures with efficiency improvement as the core, and establish a long-term mechanism for balanced urban-rural development

Improving fiscal expenditure efficiency is a direct driver for narrowing the urban-rural income gap, requiring the establishment of a results-oriented resource allocation system at the institutional design level. First, efforts should focus on the goal of equalizing public services by establishing a unified fiscal expenditure standard framework for both urban and rural areas. Basic investments in rural regions should be strengthened in livelihood sectors such as education, healthcare, and social security, and the quality gap in the supply of public goods between urban and rural areas should be addressed through dynamic adjustments to the expenditure structure.It is recommended to establish a cross-departmental committee for evaluating fiscal expenditure efficiency, incorporating experts from multiple disciplines such as economics and sociology. By employing scientific methods like DEA (Data Envelopment Analysis) to conduct full-cycle performance evaluations of expenditure projects, and directly linking evaluation results to budget allocation and policy adjustments, a closed-loop management mechanism of "input-output-feedback" can be formed.Second, given the unique characteristics of rural development, a differentiated expenditure prioritization mechanism should be established. Dedicated budgets should be allocated for areas such as rural revitalization and industrial integration, with a focus on supporting county-level economic development and fostering new forms of rural collective economy. The leverage effect of fiscal funds should be utilized to guide social capital toward the modernization of agriculture and rural areas.At the same time, efforts must be made to enhance the transparency of fiscal expenditures and establish public decision-making mechanisms involving both urban and rural residents. Through public hearings, opinion polls, and other means, urban and rural residents should be directly involved in the selection and evaluation of expenditure projects. This will ensure that the allocation of fiscal resources aligns with the fundamental requirements of common prosperity, fundamentally enhancing the development capabilities of rural residents and narrowing the income distribution gap caused by disparities in public services.

7.2. Strengthen the synergy between urbanization and fiscal expenditure efficiency to build an empowerment system that integrates urban and rural factors

The role of fiscal expenditure efficiency in mitigating the urban-rural income gap largely depends on the intermediary transmission effects of urbanization. Fiscal policies must guide the transformation of urbanization from scale expansion to

quality improvement. First, the structure of urbanization-related fiscal expenditures should be optimized, with a focus on supporting county-level urbanization and the development of urban agglomerations. Investment should be increased in infrastructure, industrial parks, and public service facilities to create spatial platforms for the flow of urban and rural factors.It is recommended to establish a special fund for improving the quality of urbanization, focusing on key areas such as the urbanization of migrant workers and the construction of demonstration zones for industry-city integration. Through fiscal subsidies and transfer payments, the costs of urbanization for rural-to-urban migrants should be reduced, the household registration system should be decoupled from the provision of public services, and the "comprehensive development of individuals" should be realized during the urbanization process.Second, fiscal spending should be strengthened to support urban-rural industrial synergy. In rural areas, priority should be given to supporting industrial platforms that connect with urbanization, such as specialty agricultural industrial parks and e-commerce logistics centers, thereby promoting the optimization of urban-rural employment structures through the extension of industrial chains.Furthermore, fiscal policies should be used to guide the expansion of high-quality public service resources to rural areas surrounding urban centers. In sectors such as education and healthcare, models such as urban-rural school consortia and medical consortiums should be implemented, allowing rural residents to enjoy the benefits of urbanization development nearby. This will fundamentally break down the institutional barriers of the urban-rural dual structure and foster a virtuous cycle where cities drive rural development and rural areas promote urban growth.

7.3. Implementing Categorized Policies Based on Heterogeneous Characteristics to Establish a Precise Dynamic Adjustment Mechanism for Fiscal Expenditures

The regional heterogeneity and urban-rural disparities in fiscal expenditure efficiency require that policy design move beyond a “one-size-fits-all” approach and establish a differentiated policy toolkit tailored to local conditions.First, addressing the differences in resource endowments between the developed eastern regions and the less developed central and western regions, fiscal expenditures should be precisely targeted: the eastern regions can increase investment in areas such as technological innovation, modern service industries, and ecological conservation, thereby enhancing the regulatory effectiveness of fiscal expenditures on the urban-rural income gap by improving total factor productivity; the central and western regions, on the other hand, need to focus on addressing infrastructure shortcomings, agricultural modernization, and ensuring basic public services, thereby strengthening the material foundation for rural development.It is recommended to establish a dynamic monitoring system for regional fiscal expenditure efficiency. Regions should be classified into different categories based

on indicators such as economic development levels, urbanization rates, and urban-rural income ratios, with differentiated efficiency improvement targets and evaluation criteria formulated to prevent policies from being “out of sync” with local conditions.Second, in response to the differing needs of various groups within urban and rural areas, expenditure programs should be designed with precision. For example, in rural areas, the focus should be on capacity building for low-income groups, using programs such as vocational skills training and entrepreneurship support to strengthen their endogenous development momentum; in urban areas, attention should be paid to social security and public service coverage for migrant workers to reduce income inequality caused by status disparities.Furthermore, policy support for special regions should be strengthened. Additional transfer payments and targeted support should be provided to revolutionary base areas, ethnic minority regions, and frontier areas. By leveraging fiscal measures, we can address development imbalances caused by factors such as geographical location and historical foundations, ultimately achieving a comprehensive improvement in fiscal expenditure efficiency and a systematic narrowing of the urban-rural income gap under the goal of common prosperity.

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